

FIG. 1

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FIG.2

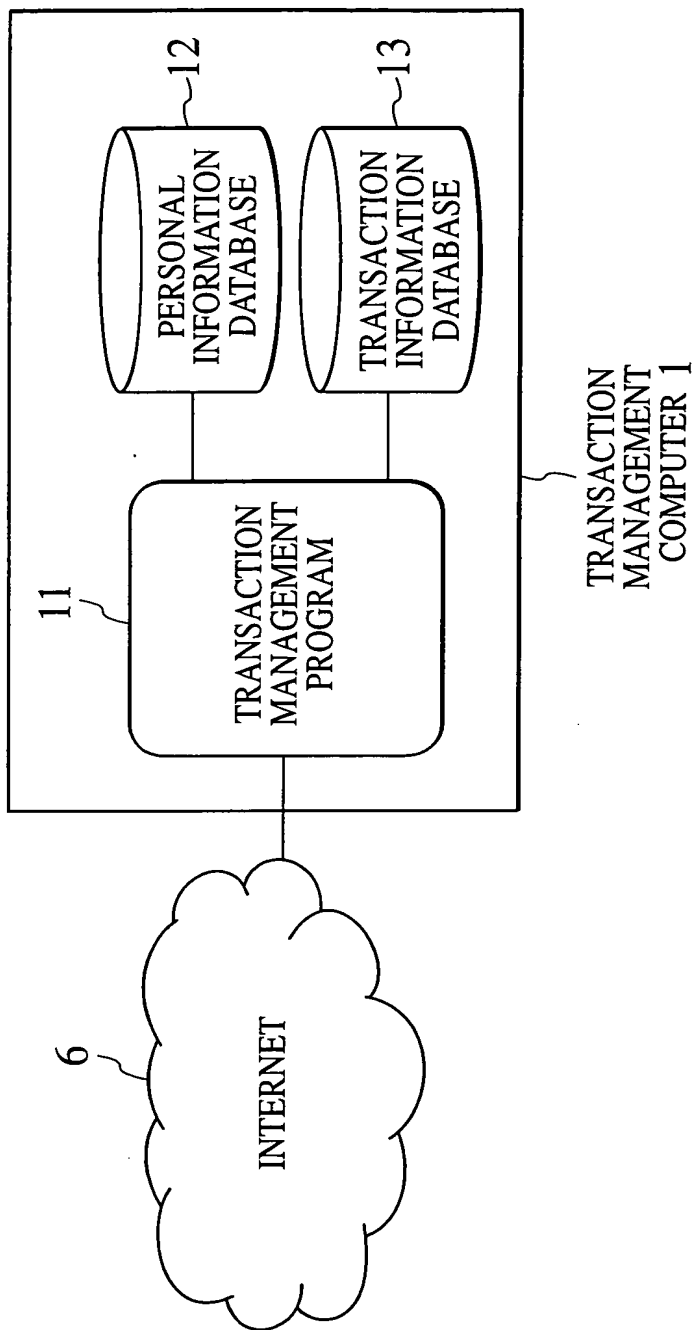
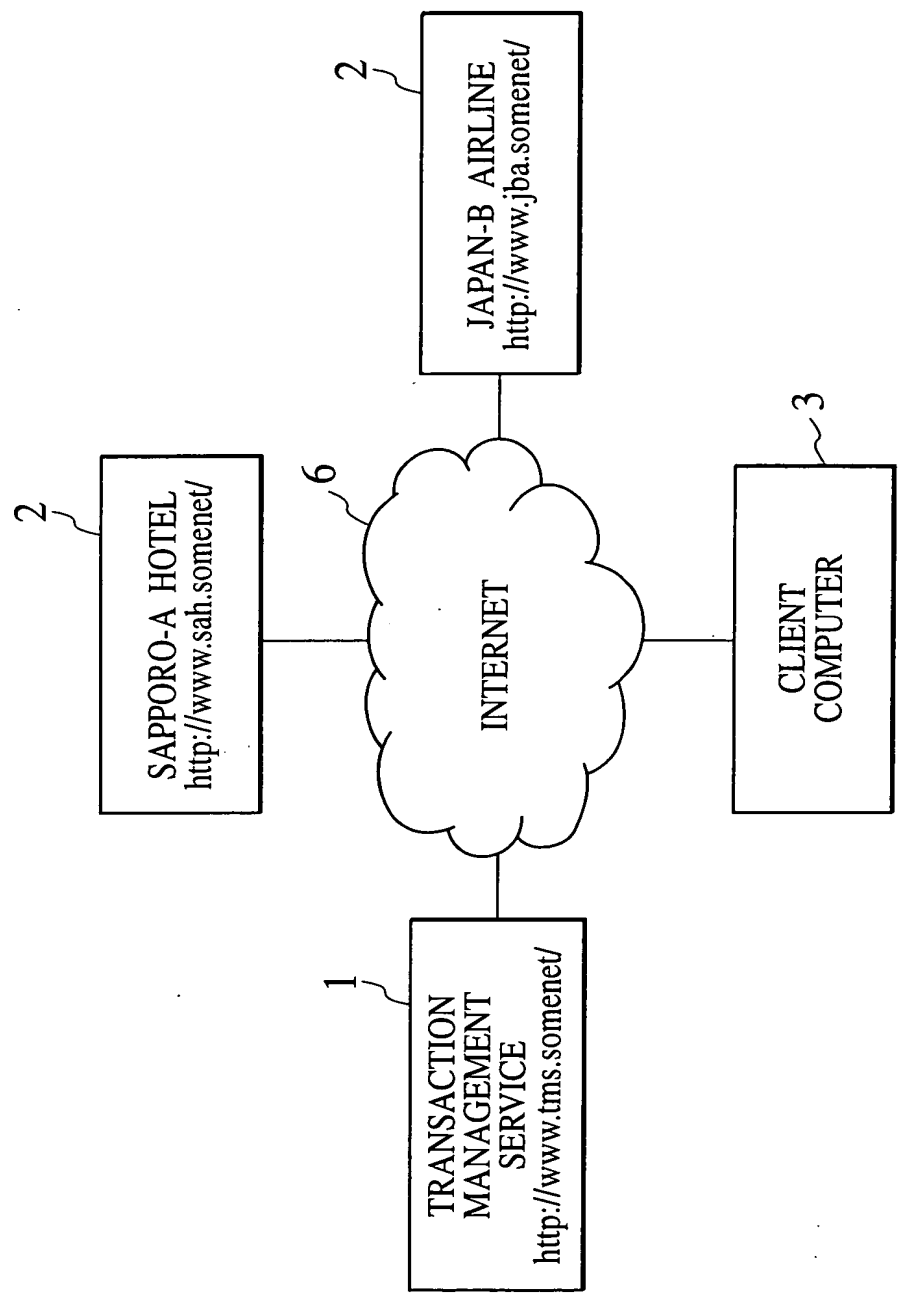
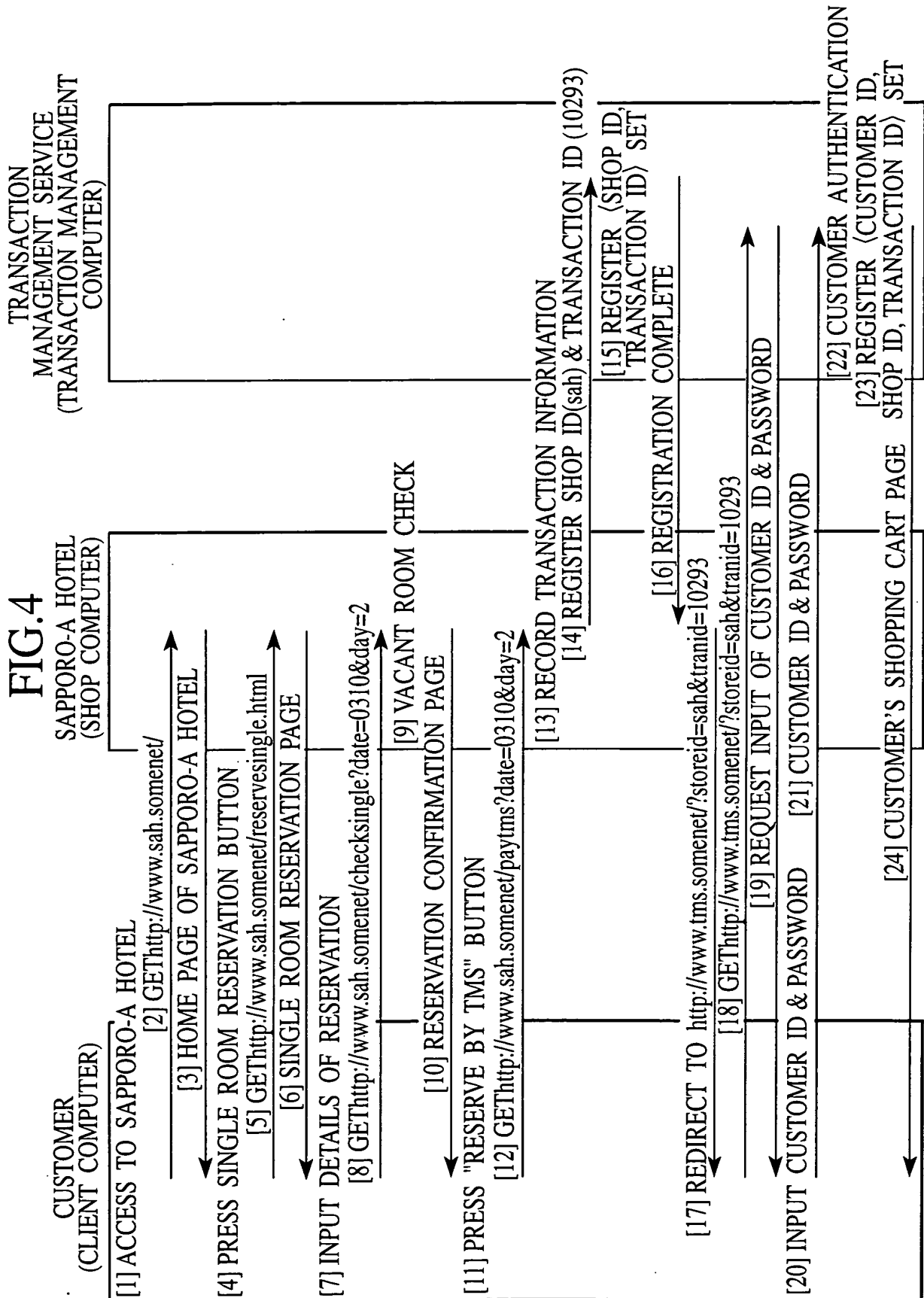


FIG.3





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FIG.5

<http://www.sah.somenet/>

SAPPORO-A HOTEL

▶ INTERNET RESERVATION SERVICE

SINGLE ¥10,000 (PER NIGHT, WITH BREAKFAST)

TWIN ¥18,000 (PER NIGHT, WITH BREAKFAST)

DELUXE TWIN ¥25,000 (PER NIGHT, WITH BREAKFAST)

▶ AVAILABLE FACILITY GUIDE

FRENCH RESTAURANT EPHEMERAL
JAPANESE CUISINE NAGORI-YUKI
COFFEE SHOP CRYSTAL

FIG.6

<http://www.sah.somenet/reservesingle.html>

SAPPORO-A HOTEL INTERNET RESERVATION SERVICE

SINGLE ¥10,000 (PER NIGHT, WITH BREAKFAST)

DATES: DAYS FROM MONTH DAY

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FIG.7

<http://www.sah.somenet/reservesingle.html>

SAPPORO-A HOTEL INTERNET RESERVATION SERVICE

SINGLE ¥10,000 (PER NIGHT, WITH BREAKFAST)

DATES: DAYS FROM

FIG.8

<http://www.sah.somenet/checksingle>

SAPPORO-A HOTEL INTERNET RESERVATION SERVICE

SINGLE ¥10,000 (PER NIGHT, WITH BREAKFAST)

2 DAYS FROM MARCH 10
A ROOM IS AVAILABLE

FIG. 9

CUSTOMER ID	SHOP ID	TRANSACTION ID	COMMITMENT DATE & TIME	REGISTRATION DATE & TIME	STATE	CART MESSAGE	COMPLETION MESSAGE
	sah	10293		1999/12/23 10:34	ACTIVE	ROOM FOR 2 DAYS FROM MARCH 10, ¥20,000	
hiroshi.yamada	raptorgift	93849	1999/12/17 19:46	1999/12/17 19:44	COMMITTED	ASSORTED CHOCOLATES, ¥2,500 STUFFED TOY, ¥3,800	FOLLOWING ORDERS ARE COMPLETED. ASSORTED CHOCOLATES, ¥2,500 STUFFED TOY, ¥3,800
hiroshi.yamada	abcflower	230	1999/12/3 15:12	1999/12/3 15:11	COMMITTED	10 ROSES, ¥500 10 STOCKS, ¥700	FOLLOWING ORDERS ARE COMPLETED. 10 ROSES, ¥500 10 STOCKS, ¥700
hiroshi.yamada	xyzfood	4928	1999/12/3 15:12	1999/12/3 15:10	COMMITTED	10Kg RICE, ¥4,500	FOLLOWING ORDERS ARE COMPLETED. 10Kg RICE, ¥4,500
taro.tanaka	xyzfood	5932		1999/12/10 17:26	ABORTED	1 BOX NOODLES, ¥5,000	
taro.tanaka	abcflower	489	1999/12/5 15:43	1999/12/5 15:42	COMMITTED	BOUQUET, ¥3,500	FOLLOWING ORDERS ARE COMPLETED. BOUQUET, ¥3,500

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FIG.10

A screenshot of a web browser window. The address bar at the top contains the URL "http://www.tms.somenet/". Below the address bar, the page title "TRANSACTION MANAGEMENT SERVICE" is displayed. The main content area contains two input fields: "USER ID" and "PASSWORD". The "USER ID" field is empty, and the "PASSWORD" field is also empty. Below these fields, there is a "START" button.

http://www.tms.somenet/

TRANSACTION MANAGEMENT SERVICE

USER ID

PASSWORD

START

FIG.11

A screenshot of a web browser window, similar to FIG.10. The address bar at the top contains the URL "http://www.tms.somenet/". Below the address bar, the page title "TRANSACTION MANAGEMENT SERVICE" is displayed. The main content area contains two input fields: "USER ID" and "PASSWORD". The "USER ID" field contains the text "hiroshi.yamada". The "PASSWORD" field contains ten asterisks "*****". Below these fields, there is a "START" button.

http://www.tms.somenet/

TRANSACTION MANAGEMENT SERVICE

USER ID

PASSWORD

START

FIG.12

CUSTOMER ID	PASSWORD	NAME	ADDRESS	PHONE NUMBER	MAIL ADDRESS	ACCOUNT NUMBER
hiroshi.yamada	*****	HIROSHI YAMADA	1 Komukai- Toshiba-Cho, Miyuki-Ku, Kawasaki	012-345-6789	hyamada@mail.somenet	123-456-789012
taro.tanaka	*****	TARO TANAKA	25 Umibe-Cho, Yamashita-Ku, Yokohama	123-456-7890	ttanaka@host.anynet	234-567-890123

FIG.13

CUSTOMER ID	SHOP ID	TRANSACTION ID	COMMITMENT DATE & TIME	REGISTRATION DATE & TIME	STATE	CART MESSAGE	COMPLETION MESSAGE
hiroshi.yamada	sah	10293		1999/12/23 10:34	ACTIVE	ROOM FOR 2 DAYS FROM MARCH 10, ¥20,000	
hiroshi.yamada	raptorgift	93849	1999/12/17 19:46	1999/12/17 19:44	COMMITTED	ASSORTED CHOCOLATES, ¥2,500 STUFFED TOY, ¥3,800	FOLLOWING ORDERS ARE COMPLETED. ASSORTED CHOCOLATES, ¥2,500 STUFFED TOY, ¥3,800
hiroshi.yamada	abcflower	230	1999/12/3 15:12	1999/12/3 15:11	COMMITTED	10 ROSES, ¥500 10 STOCKS, ¥700	FOLLOWING ORDERS ARE COMPLETED. 10 ROSES, ¥500 10 STOCKS, ¥700
hiroshi.yamada	xyzfood	4928	1999/12/3 15:12	1999/12/3 15:10	COMMITTED	10Kg RICE, ¥4,500	FOLLOWING ORDERS ARE COMPLETED. 10Kg RICE, ¥4,500
taro.tanaka	xyzfood	5932		1999/12/10 17:26	ABORTED	1 BOX NOODLES, ¥5,000	
taro.tanaka	abcflower	489	1999/12/5 15:43	1999/12/5 15:42	COMMITTED	BOUQUET, ¥3,500	FOLLOWING ORDERS ARE COMPLETED. BOUQUET, ¥3,500

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FIG.14

<http://www.tms.somenet/>

TRANSACTION STATUS OF HIROSHI YAMADA

► ITEMS CURRENTLY IN SHOPPING CART

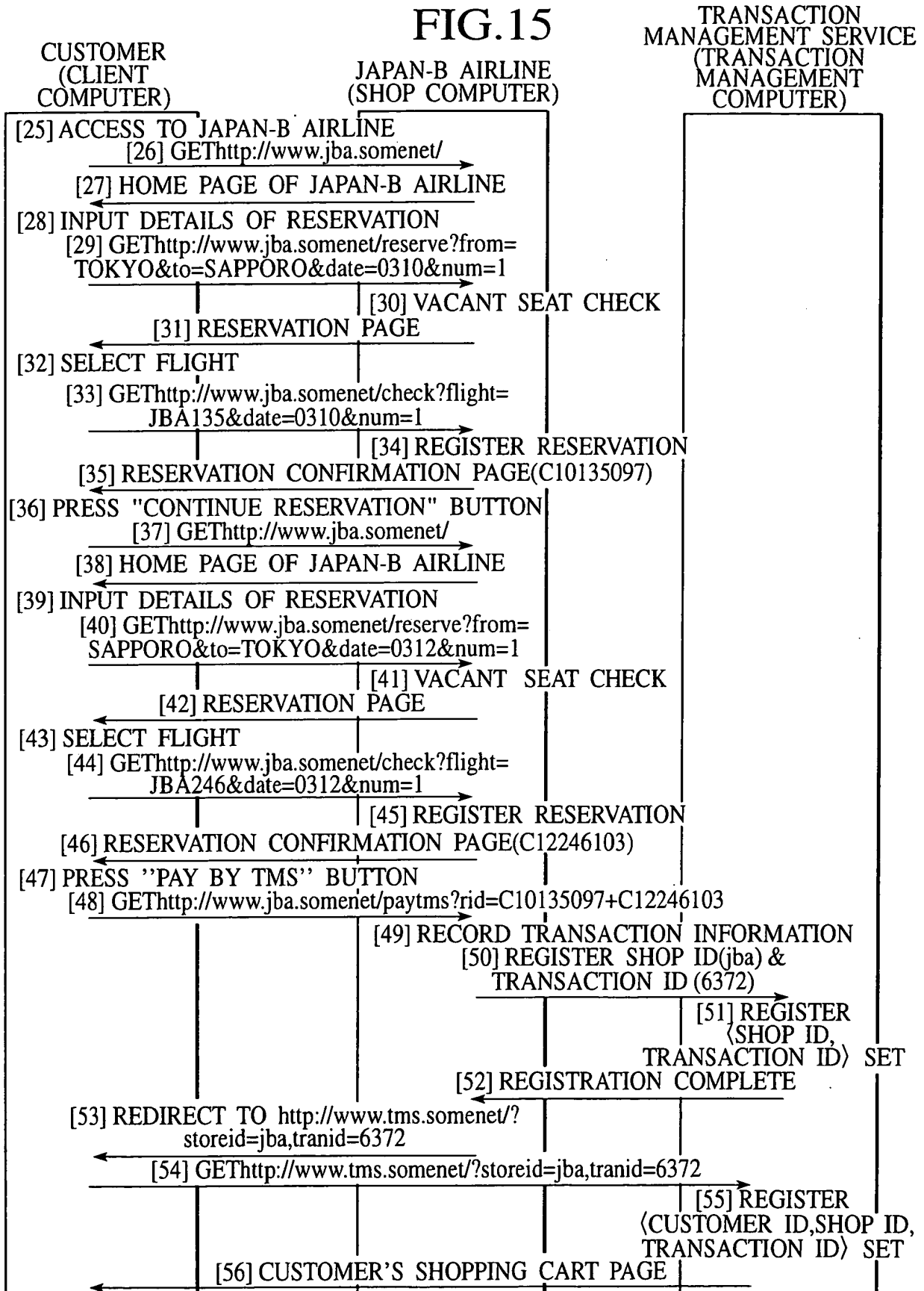
TOTAL	¥20,000	COLLECTIVELY COMMIT	COLLECTIVELY ABORT
-------	---------	------------------------	-----------------------

SAPPORO-A HOTEL ROOM FOR 2DAYS FROM MARCH 10, ¥20,000	SEPARATELY COMMIT	SEPARATELY ABORT
---	----------------------	---------------------

► PAST TRANSACTIONS

THIS MONTH (DECEMBER, 1999)
LAST MONTH (NOVEMBER, 1999)
OLDER TRANSACTIONS

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FIG.15



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FIG.16

<http://www.jba.somenet/>

JAPAN-B AIRLINE

INTERNET RESERVATION SERVICE

DATE:

FROM TO

NUMBER OF SEATS

FIG.17

<http://www.jba.somenet/>

JAPAN-B AIRLINE

INTERNET RESERVATION SERVICE

DATE:

FROM TO

NUMBER OF SEATS

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FIG.18

http://www.jba.somenet/reserve				
JAPAN-B AIRLINE				
<u>SEAT AVAILABILITY STATUS</u>				
DATE : MARCH 10, FROM TOKYO TO SAPPORO, 1 SEAT				
FLIGHT NO.	DEPARTING	ARRIVING		
JBA135	7:00	8:00	AVAILABLE	<input type="button" value="RESERVE"/>
JBA137	10:00	11:00	FULL	
JBA139	14:00	15:00	FULL	
JBA141	17:00	18:00	AVAILABLE	<input type="button" value="RESERVE"/>

FIG.19

http://www.jba.somenet/check	
JAPAN-B AIRLINE	
<u>RESERVATION CONFIRMATION</u>	
DATE : MARCH 10, FROM TOKYO TO SAPPORO, 1 SEAT	
FLIGHT NO.	DEPARTING ARRIVING
JBA135	7:00 8:00
IF YOU WISH TO CONTINUE RESERVATION,	<input type="button" value="CONTINUE RESERVATION"/>
IF YOU WISH TO GO TO PAYMENT, AND:	
WANT TO USE TMS FOR PAYMENT,	<input type="button" value="PAY BY TMS"/>
WANT TO USE OTHER WAYS OF PAYMENT,	<input type="button" value="PAYMENT"/>

FIG.18 14/36

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FIG.20

http://www.jba.somenet/		
JAPAN-B AIRLINE		
<u>INTERNET RESERVATION SERVICE</u>		
DATE:	<input type="text" value="MONTH"/>	<input type="text" value="DAY"/>
FROM	<input type="text"/>	TO <input type="text"/>
NUMBER OF SEATS	<input type="text"/>	<input type="button" value="VACANT SEAT CHECK"/>
<u>COMPLETED RESERVATION</u>		
• MARCH 10, JBA135 TOKTO 7:00 → SAPPORO 8:00, 1 SEAT		

FIG.21

http://www.jba.somenet/		
JAPAN-B AIRLINE		
<u>INTERNET RESERVATION SERVICE</u>		
DATE:	<input type="text" value="MARCH"/>	<input type="text" value="12"/>
FROM	<input type="text" value="SAPPORO"/>	TO <input type="text" value="TOKYO"/>
NUMBER OF SEATS	<input type="text" value="1"/>	<input type="button" value="VACANT SEAT CHECK"/>

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FIG.22

http://www.jba.somenet/reserve				
JAPAN-B AIRLINE				
<u>SEAT AVAILABILITY STATUS</u>				
DATE : MARCH 12, FROM SAPPORO TO TOKYO, 1 SEAT				
FLIGHT NO.	DEPARTING	ARRIVING		
JBA240	6:00	7:00	AVAILABLE	<input type="button" value="RESERVE"/>
JBA242	9:00	10:00	FULL	
JBA246	13:00	14:00	AVAILABLE	<input type="button" value="RESERVE"/>
JBA248	16:00	17:00	FULL	

FIG.23

http://www.jba.somenet/check	
JAPAN-B AIRLINE	
<u>RESERVATION CONFIRMATION</u>	
DATE : MARCH 12, FROM SAPPORO TO TOKYO, 1 SEAT	
FLIGHT NO.	DEPARTING ARRIVING
JBA246	13:00 14:00
IF YOU WISH TO CONTINUE RESERVATION,	<input type="button" value="CONTINUE RESERVATION"/>
IF YOU WISH TO GO TO PAYMENT, AND:	
WANT TO USE TMS FOR PAYMENT,	<input type="button" value="PAY BY TMS"/>
WANT TO USE OTHER WAYS OF PAYMENT,	<input type="button" value="PAYMENT"/>

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FIG.24

CUSTOMER ID	SHOP ID	TRANSACTION ID	COMMITMENT DATE & TIME	REGISTRATION DATE & TIME	STATE	CART MESSAGE	COMPLETION MESSAGE
hiroshi.yamada	sah	10293		1999/12/23 10:34	ACTIVE	ROOM FOR 2 DAYS FROM MARCH 10, ¥20,000	
hiroshi.yamada	jba	6372		1999/12/23 10:35	ACTIVE	MARCH 10, TOKYO→SAPPORO JBA135 MARCH 12, SAPPORO→TOKYO JBA246 ¥40,000	
hiroshi.yamada	raptorgift	93849	1999/12/17 19:46	1999/12/17 19:44	COMMITTED	ASSORTED CHOCOLATES, ¥2,500 STUFFED TOY, ¥3,800	FOLLOWING ORDERS ARE COMPLETED. ASSORTED CHOCOLATES, ¥2,500 STUFFED TOY, ¥3,800
hiroshi.yamada	abcflower	230	1999/12/3 15:12	1999/12/3 15:11	COMMITTED	10 ROSES, ¥500 10 STOCKS, ¥700	FOLLOWING ORDERS ARE COMPLETED. 10 ROSES, ¥500 10 STOCKS, ¥700
hiroshi.yamada	xyzfood	4928	1999/12/3 15:12	1999/12/3 15:10	COMMITTED	10Kg RICE, ¥4,500	FOLLOWING ORDERS ARE COMPLETED. 10Kg RICE, ¥4,500
taro.tanaka	xyzfood	5932		1999/12/10 17:26	ABORTED	1 BOX NOODLES, ¥5,000	
taro.tanaka	abcflower	489	1999/12/5 15:43	1999/12/5 15:42	COMMITTED	BOUQUET, ¥3,500	FOLLOWING ORDERS ARE COMPLETED. BOUQUET, ¥3,500

205250 2249860

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FIG.25

<http://www.tms.somenet/>

TRANSACTION STATUS OF HIROSHI YAMADA

► ITEMS CURRENTLY IN SHOPPING CART

TOTAL	¥60,000	COLLECTIVELY COMMIT	COLLECTIVELY ABORT
SAPPORO-A HOTEL ROOM FOR 2DAYS FROM MARCH 10, ¥20,000		SEPARATELY COMMIT	SEPARATELY ABORT
JAPAN-B AIRLINE MARCH 10, TOKYO →SAPPORO, JBA135 MARCH 12; SAPPORO →TOKYO, JBA246 ¥40,000		SEPARATELY COMMIT	SEPARATELY ABORT

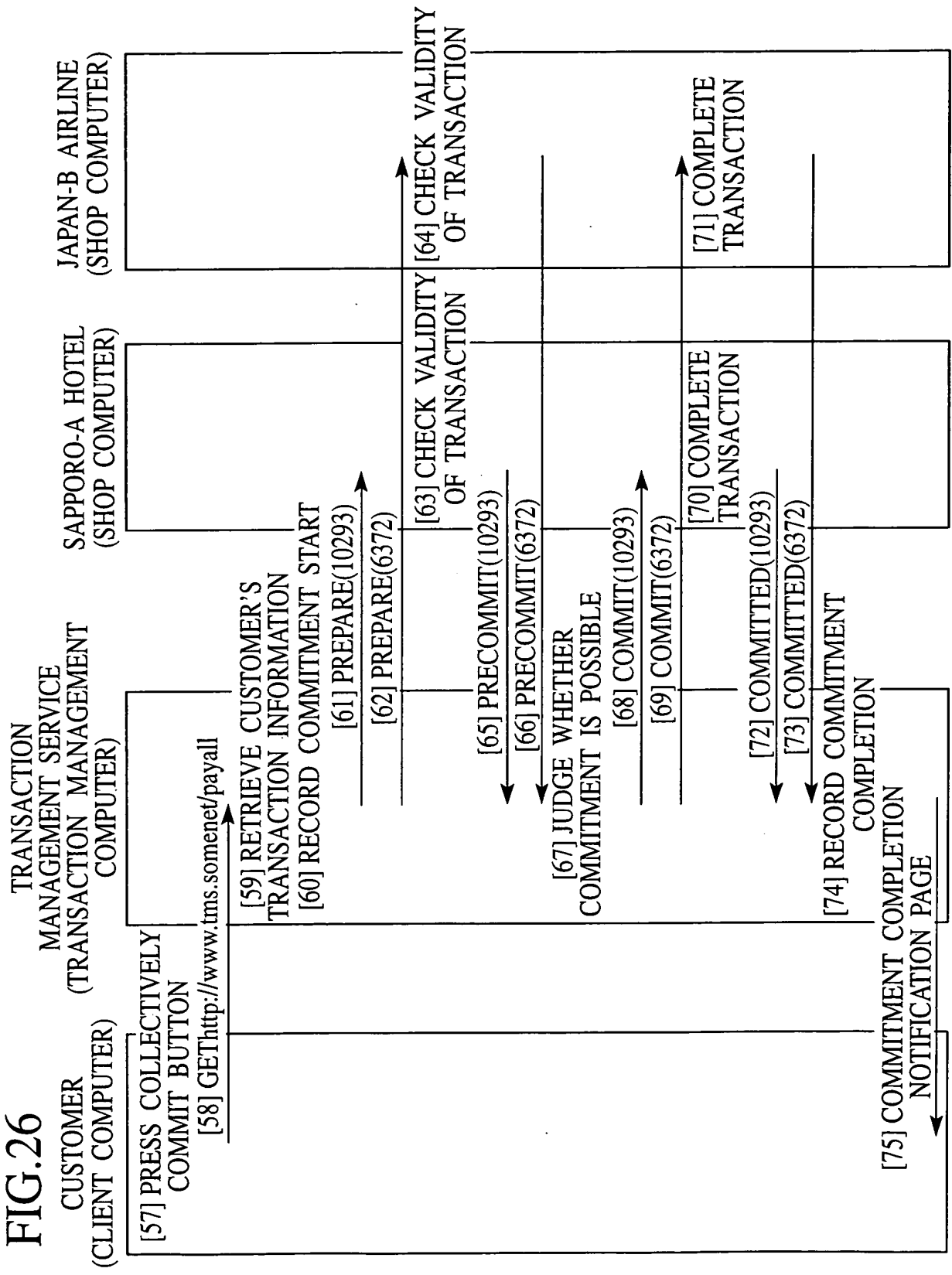
► PAST TRANSACTIONS

THIS MONTH (DECEMBER, 1999)

LAST MONTH (NOVEMBER, 1999)

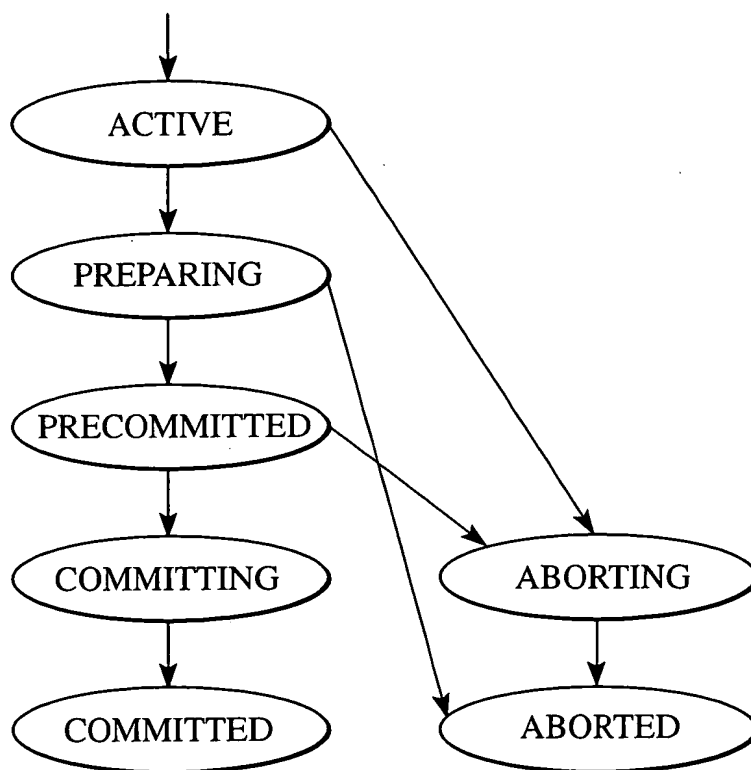
OLDER TRANSACTIONS

FIG.26



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FIG.27



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FIG.28

CUSTOMER ID	SHOP ID	TRANSACTION ID	COMMITMENT DATE & TIME	REGISTRATION DATE & TIME	STATE	CART MESSAGE	COMPLETION MESSAGE
hiroshi.yamada	sah	10293	1999/12/23 10:36	1999/12/23 10:34	PREPARING	ROOM FOR 2 DAYS FROM MARCH 10, ¥20,000	
hiroshi.yamada	jba	6372	1999/12/23 10:36	1999/12/23 10:35	PREPARING	MARCH 10, TOKYO→SAPPORO JBA135 MARCH 12, SAPPORO→TOKYO JBA246 ¥40,000	
hiroshi.yamada	raptorgift	93849	1999/12/17 19:46	1999/12/17 19:44	COMMITTED	ASSORTED CHOCOLATES, ¥2,500 STUFFED TOY, ¥3,800	FOLLOWING ORDERS ARE COMPLETED. ASSORTED CHOCOLATES, ¥2,500 STUFFED TOY, ¥3,800
hiroshi.yamada	abcflower	230	1999/12/3 15:12	1999/12/3 15:11	COMMITTED	10 ROSES, ¥500 10 STOCKS, ¥700	FOLLOWING ORDERS ARE COMPLETED. 10 ROSES, ¥500 10 STOCKS, ¥700
hiroshi.yamada	xyzfood	4928	1999/12/3 15:12	1999/12/3 15:10	COMMITTED	10Kg RICE, ¥4,500	FOLLOWING ORDERS ARE COMPLETED. 10Kg RICE, ¥4,500
taro.tanaka	xyzfood	5932		1999/12/10 17:26	ABORTED	1 BOX NOODLES, ¥5,000	
taro.tanaka	abcflower	489	1999/12/5 15:43	1999/12/5 15:42	COMMITTED	BOUQUET, ¥3,500	FOLLOWING ORDERS ARE COMPLETED. BOUQUET, ¥3,500

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FIG.29

CUSTOMER ID	SHOP ID	TRANSACTION ID	COMMITMENT DATE & TIME	REGISTRATION DATE & TIME	STATE	CART MESSAGE	COMPLETION MESSAGE
hiroshi. yamada	sah	10293	1999/12/23 10:36	1999/12/23 10:34	COMMITTED	ROOM FOR 2 DAYS FROM MARCH 10, ¥20,000	A ROOM FOR 2 DAYS FROM MARCH 10 IS RESERVED. THE RESERVATION NUMBER IS 741. PLEASE TELL THE RESERVATION NUMBER WHEN YOUR CHECK IN. ¥20,000 WILL BE CHARGED.
hiroshi. yamada	jba	6372	1999/12/23 10:36	1999/12/23 10:35	COMMITTED	MARCH 10, TOKYO→SAPORO JBA135 MARCH 12, SAPORO→TOKYO JBA246 ¥40,000	FOLLOWING RESERVATION IS MADE. MARCH 10, FROM TOKYO TO SAPORO, JBA135 RESERVATION NUMBER C10135097 MARCH 12, FROM SAPORO TO TOKYO, JBA246 RESERVATION NUMBER C12246103 TICKETS WILL BE DELIVERED TO YOUR HOME BY MARCH 1. ¥40,000 WILL BE CHARGED.
hiroshi. yamada	raptorgift	93849	1999/12/17 19:46	1999/12/17 19:44	COMMITTED	ASSORTED CHOCOLATES, ¥2,500 STUFFED TOY, ¥3,800	FOLLOWING ORDERS ARE COMPLETED. ASSORTED CHOCOLATES, ¥2,500 STUFFED TOY, ¥3,800
hiroshi. yamada	abcflower	230	1999/12/3 15:12	1999/12/3 15:11	COMMITTED	10 ROSES, ¥500 10 STOCKS, ¥700	FOLLOWING ORDERS ARE COMPLETED. 10 ROSES, ¥500, 10 STOCKS, ¥700
hiroshi. yamada	xyzfood	4928	1999/12/3 15:12	1999/12/3 15:10	COMMITTED	10Kg RICE, ¥4,500	FOLLOWING ORDERS ARE COMPLETED. 10Kg RICE, ¥4,500
taro.tanaka	xyzfood	5932		1999/12/10 17:26	ABORTED	1 BOX NOODLES, ¥5,000	
taro.tanaka	abcflower	489	1999/12/5 15:43	1999/12/5 15:42	COMMITTED	BOUQUET, ¥3,500	FOLLOWING ORDERS ARE COMPLETED. BOUQUET, ¥3,500

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FIG.30

<http://www.tms.somenet/pay>

DEAR HIROSHI YAMADA

THE FOLLOWING TRANSACTIONS ARE COMMITTED.

SAPPORO-A HOTEL

A ROOM FOR 2 DAYS FROM MARCH 10 IS RESERVED.

THE RESERVATION NUMBER IS 741.

PLEASE TELL THE RESERVATION NUMBER WHEN YOU CHECK IN.

¥20,000 WILL BE CHARGED.

JAPAN-B AIRLINE

FOLLOWING RESERVATION IS MADE.

MARCH 10, FROM TOKYO TO SAPPORO, JBA135,
RESERVATION NUMBER C10135097

MARCH 12, FROM SAPPORO TO TOKYO, JBA246,
RESERVATION NUMBER C12246103

TICKETS WILL BE DELIVERED TO YOUR HOME BY MARCH 1.

¥40,000 WILL BE CHARGED.

THE TOTAL CHARGE OF ¥60,000 FOR THESE
TRANSACTIONS WILL BE WITHDRAWN FROM
YOUR SPECIFIED ACCOUNT ON JANUARY 31.
THANK YOU FOR SHOPPING VIA TMS.

2025072219560

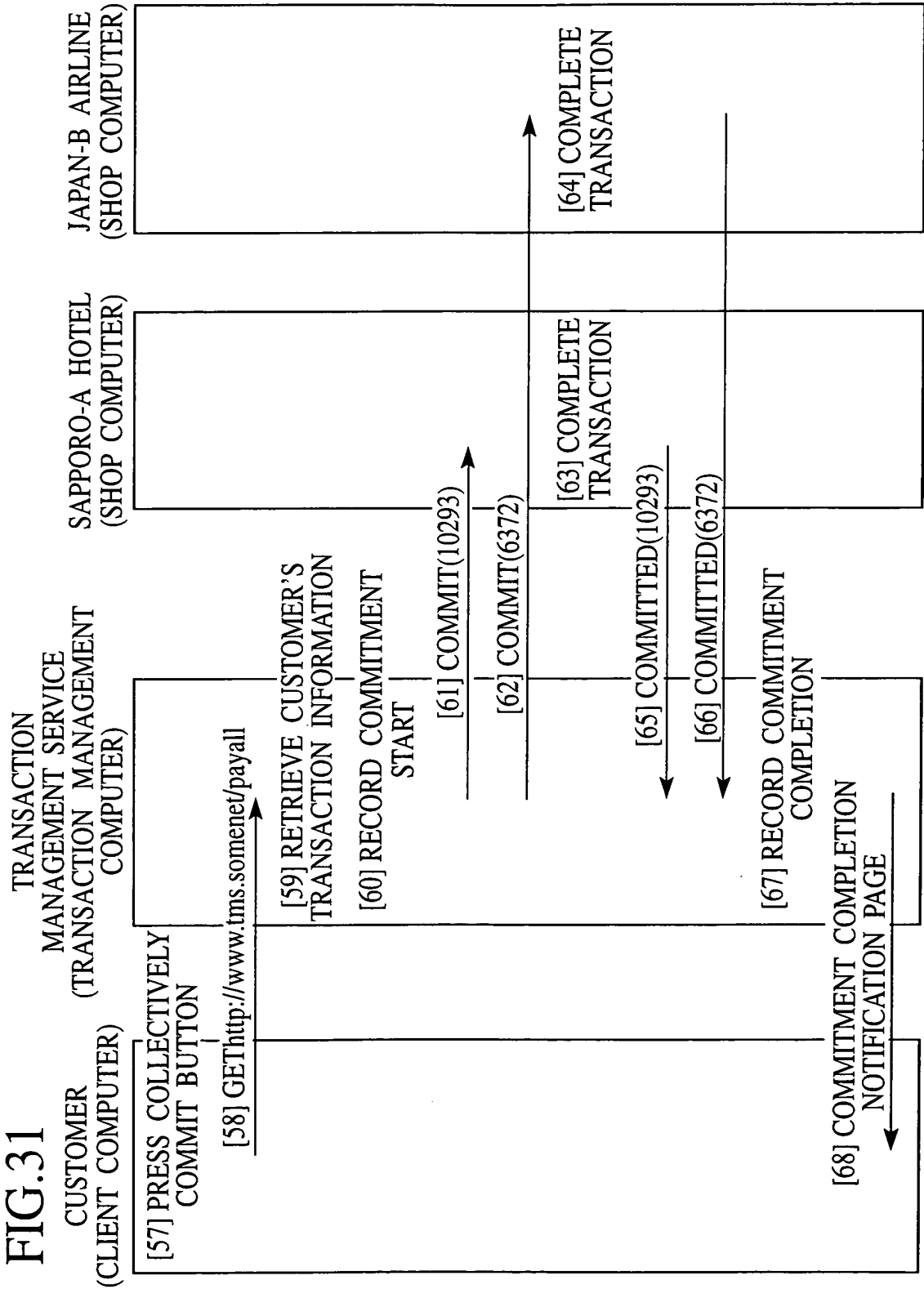
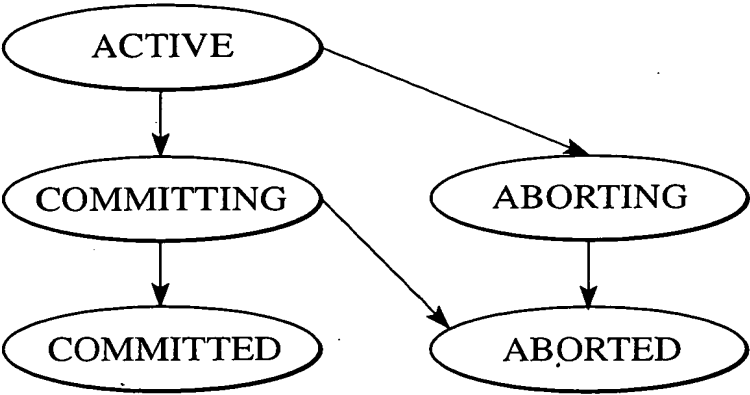


FIG.32



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FIG.33

SHOPPING WINDOW

http://www.jba.somenet/	
JAPAN-B AIRLINE	
<u>INTERNET RESERVATION SERVICE</u>	
DATE: <input type="text" value="MARCH"/>	<input type="text" value="10"/>
FROM <input type="text" value="TOKYO"/>	TO <input type="text" value="SAPPORO"/>
NUMBER OF SEATS <input type="text" value="1"/>	<input type="text" value="VACANT SEAT CHECK"/>

TRANSACTION STATUS OF HIROSHI YAMADA	
SHOPPING CART TOTAL	¥20,000
<input type="text" value="COLLECTIVELY
COMMIT"/>	<input type="text" value="COLLECTIVELY
ABORT"/>
SAPPORO-A HOTEL A ROOM FOR 2DAYS FROM MARCH 10, ¥20,000	
<input type="text" value="COMMIT"/>	<input type="text" value="ABORT"/>
PAST TRANSACTIONS	
<input type="text" value="THIS MONTH (DECEMBER, 1999)"/>	
<input type="text" value="LAST MONTH (NOVEMBER, 1999)"/>	
<input type="text" value="OLDER TRANSACTIONS"/>	

DISPLAY SCREEN

SHOPPING CART WINDOW

10550" 2649860

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FIG.34

<http://www.tms.somenet/thismonth>

TRANSACTION STATUS OF HIROSHI YAMADA
ON THIS MONTH (DECEMBER, 1999)

DECEMBER 3

ABC FLOWERS

10 ROSES, ¥500
10 STOCKS, ¥700

XYZ FOODS

10Kg RICE, ¥4,500

DECEMBER 17

RAPTOR GIFT SHOP

ASSORTED CHOCOLATES, ¥2,500
STUFFED TOY, ¥3,800

▶ PAST TRANSACTIONS

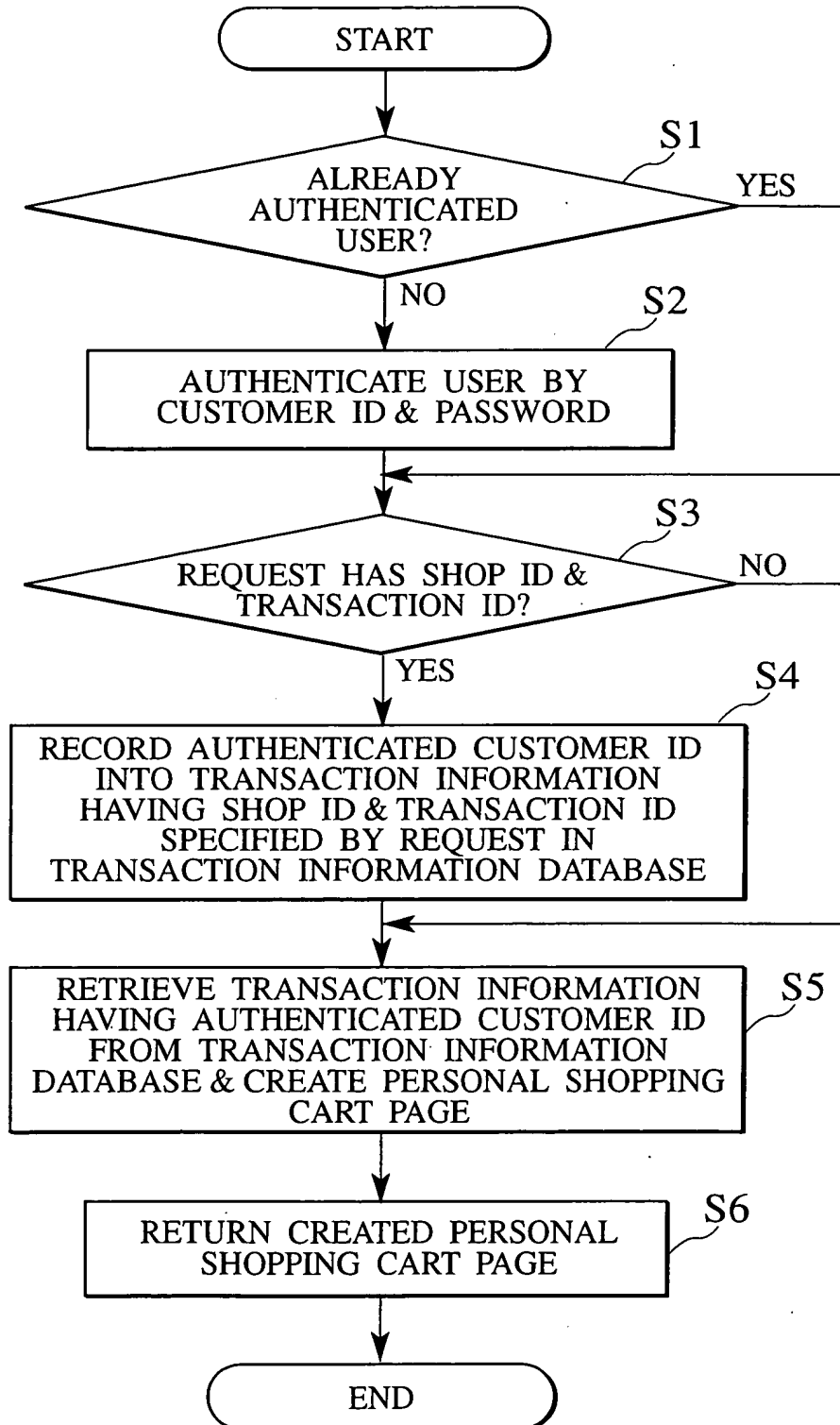
LAST MONTH (NOVEMBER, 1999)

OLDER TRANSACTIONS

http://www.tms.somenet/					
TRANSACTION STATUS OF HIROSHI YAMADA					
▶ ITEMS CURRENTLY IN SHOPPING CART					
<table style="width: 100%;"> <tr> <td style="text-align: right; padding-right: 20px;">TOTAL</td> <td style="text-align: right; padding-right: 20px;">¥0</td> </tr> </table>	TOTAL	¥0	<table style="width: 100%;"> <tr> <td style="width: 50%; text-align: center; border: 1px solid black; padding: 5px;"> COLLECTIVELY COMMIT </td> <td style="width: 50%; text-align: center; border: 1px solid black; padding: 5px;"> COLLECTIVELY ABORT </td> </tr> </table>	COLLECTIVELY COMMIT	COLLECTIVELY ABORT
TOTAL	¥0				
COLLECTIVELY COMMIT	COLLECTIVELY ABORT				
<u>FOLLOWING TRANSACTIONS ARE ABORTED AS THEY ARE NOT COMMITTED FOR LONG TIME</u>					
DECEMBER 23	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <u>SAPPORO-A HOTEL</u> A ROOM FOR 2DAYS FROM MARCH 10, ¥20,000 </div> <div style="border: 1px solid black; padding: 5px;"> <u>JAPAN-B AIRLINE</u> MARCH 10, TOKYO →SAPPORO, JBA135 MARCH 12, SAPPORO →TOKYO, JBA246 <div style="text-align: right; padding-top: 10px;">¥40,000</div> </div>				
▶ PAST TRANSACTIONS					
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px; text-align: center;"> THIS MONTH (DECEMBER, 1999) </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px; text-align: center;"> LAST MONTH (NOVEMBER, 1999) </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> OLDER TRANSACTIONS </div>					

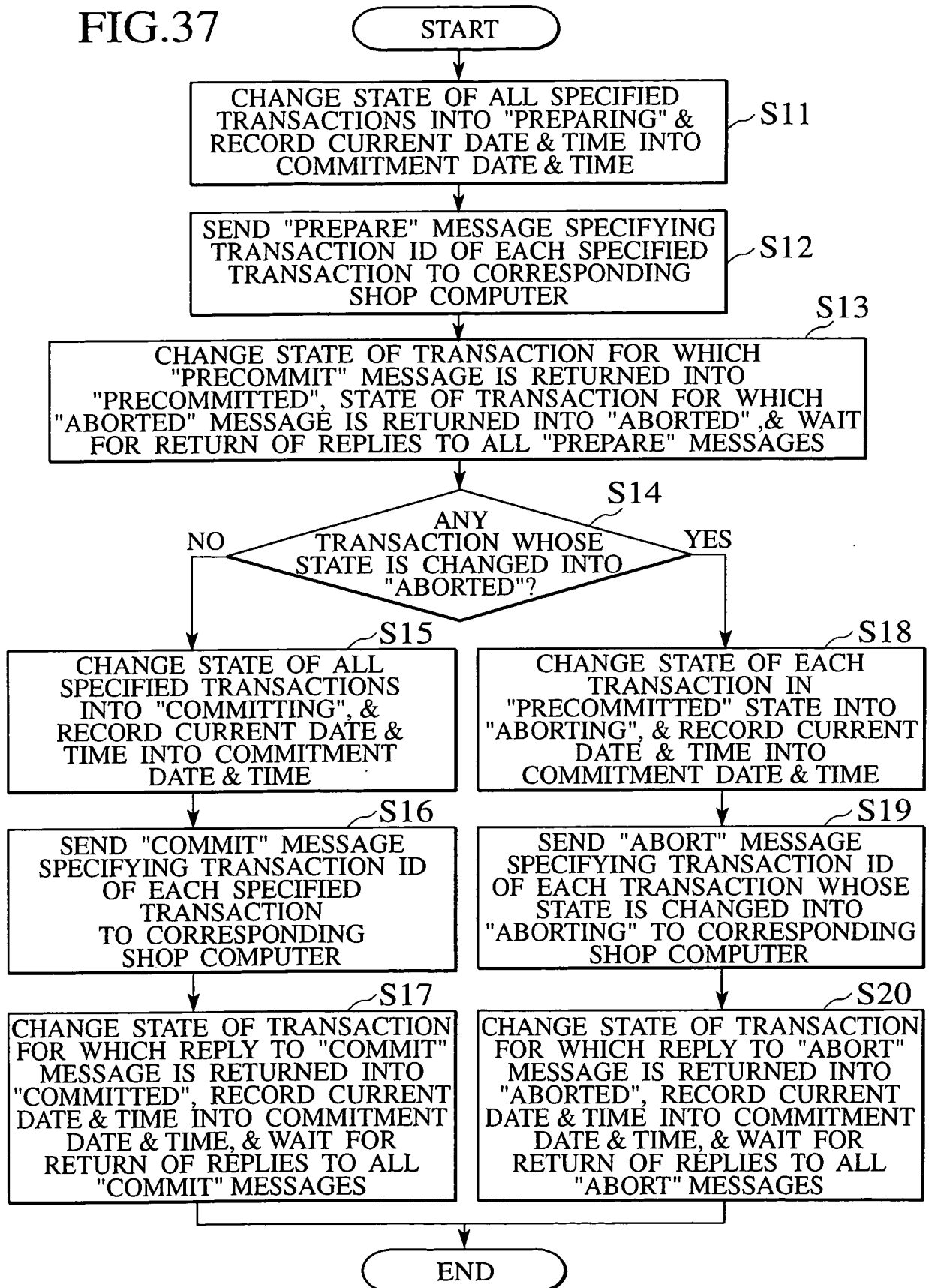
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FIG.36



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FIG.37



```

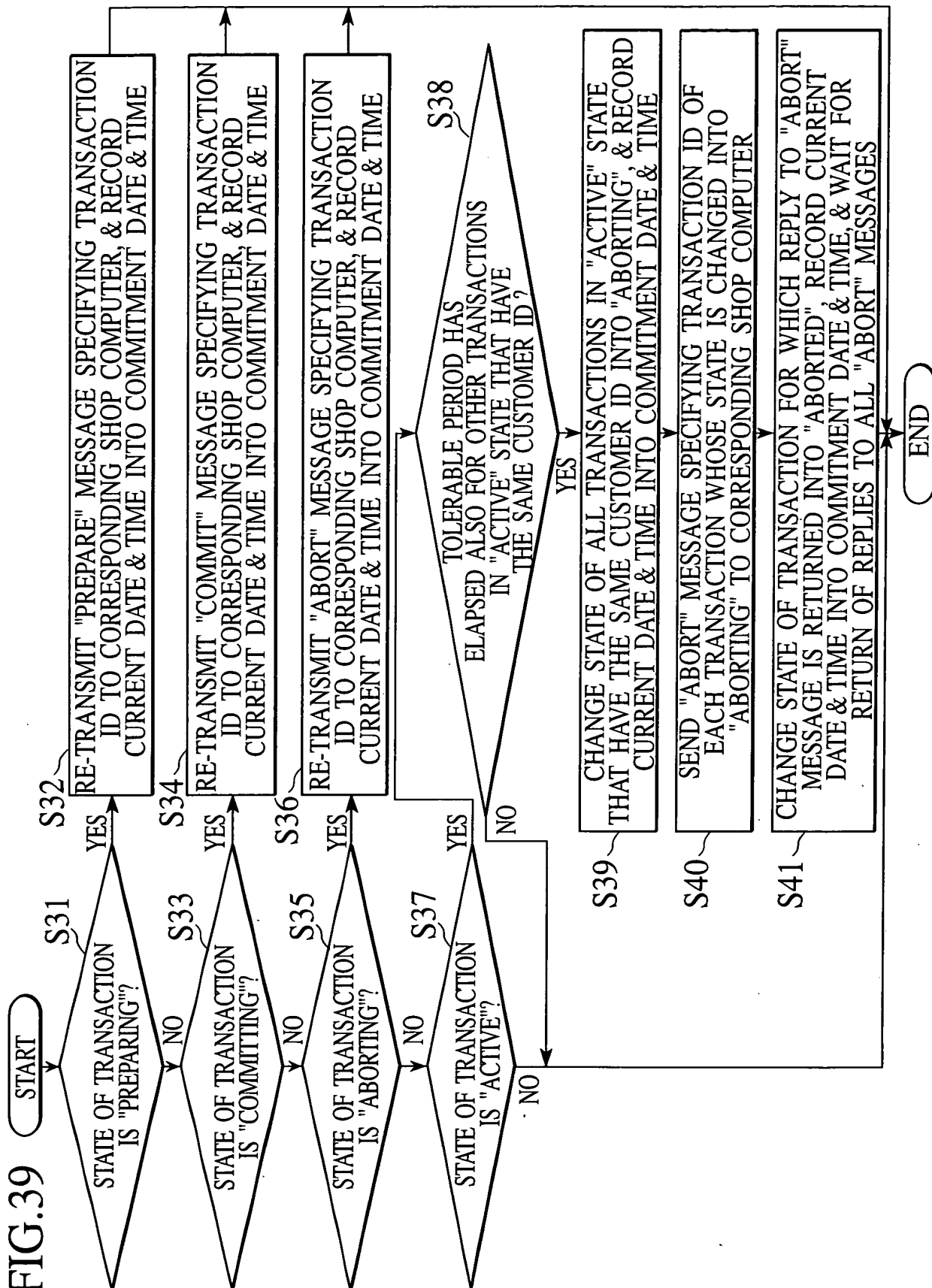
graph TD
    START([START]) --> A[CHANGE STATE OF ALL SPEC  
ACTIONS INTO "ABORT  
ED CURRENT DATE & TIME  
COMMITMENT DATE & TIME"]
    A --> B["'ABORT" MESSAGE SPEC  
ACTION ID OF EACH SP  
ACTION TO CORRESPOND  
SHOP COMPUTER"]
    B --> C["E STATE OF TRANSACTION  
REPLY TO "ABORT" MES  
SAGE INTO "ABORTED", R  
ELEASE DATE & TIME INTO COM  
MITMENT TIME, & WAIT FOR RETU  
RN TO ALL "ABORT" MES"]
    C --> END([END])
  
```

S21

S22

S23

FIG. 39



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FIG.40

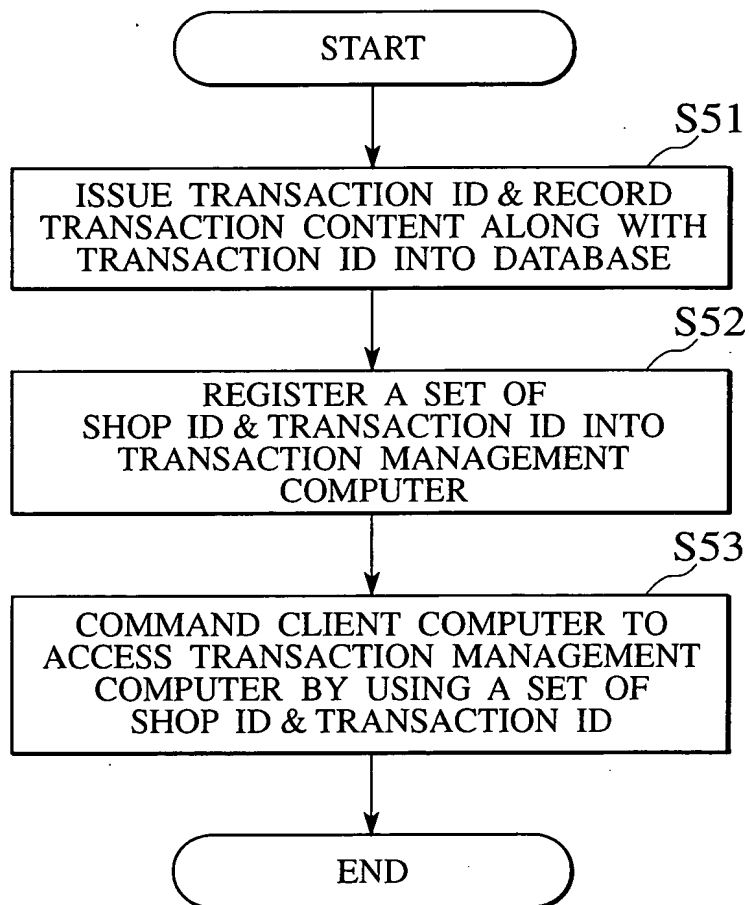
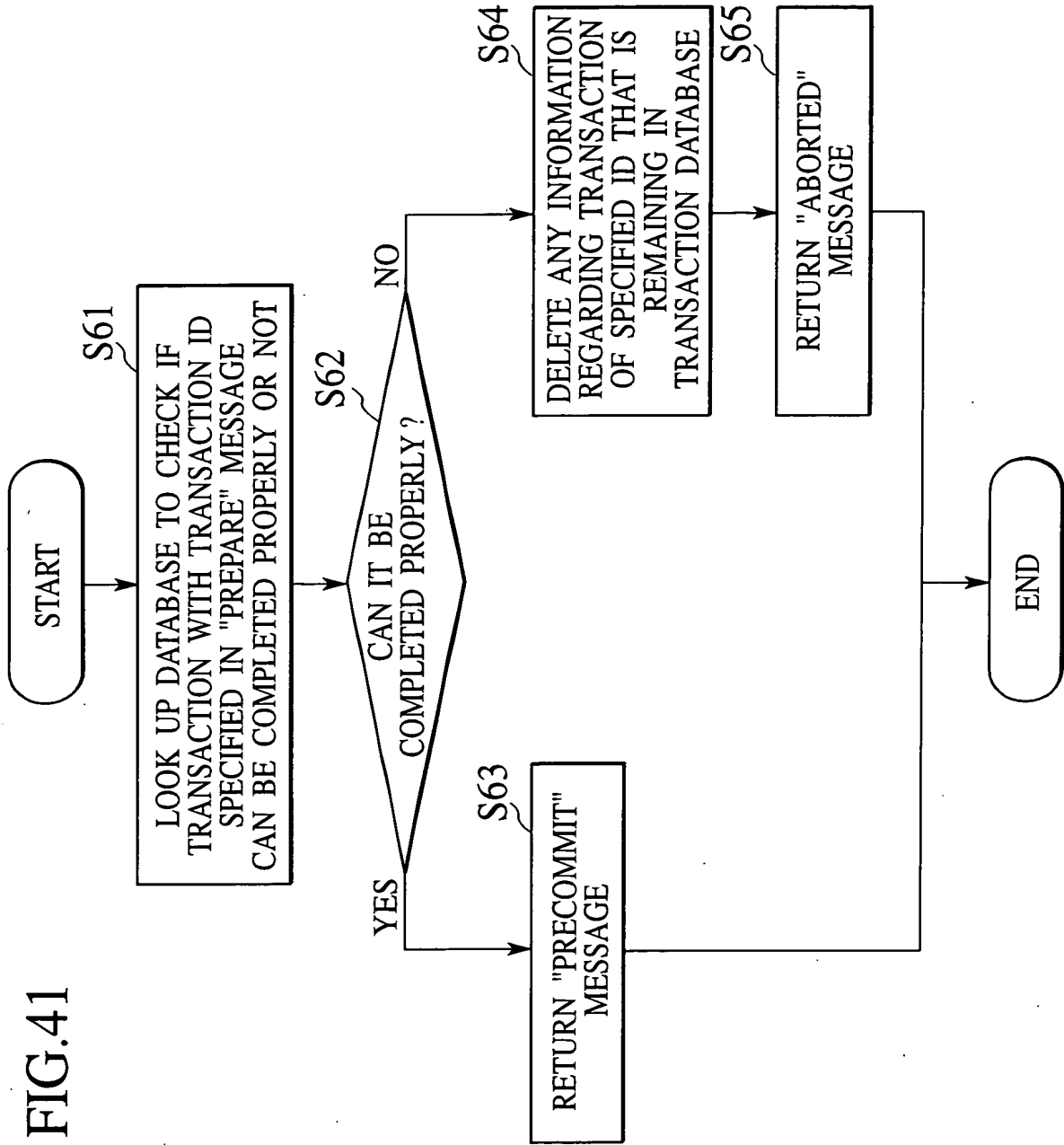
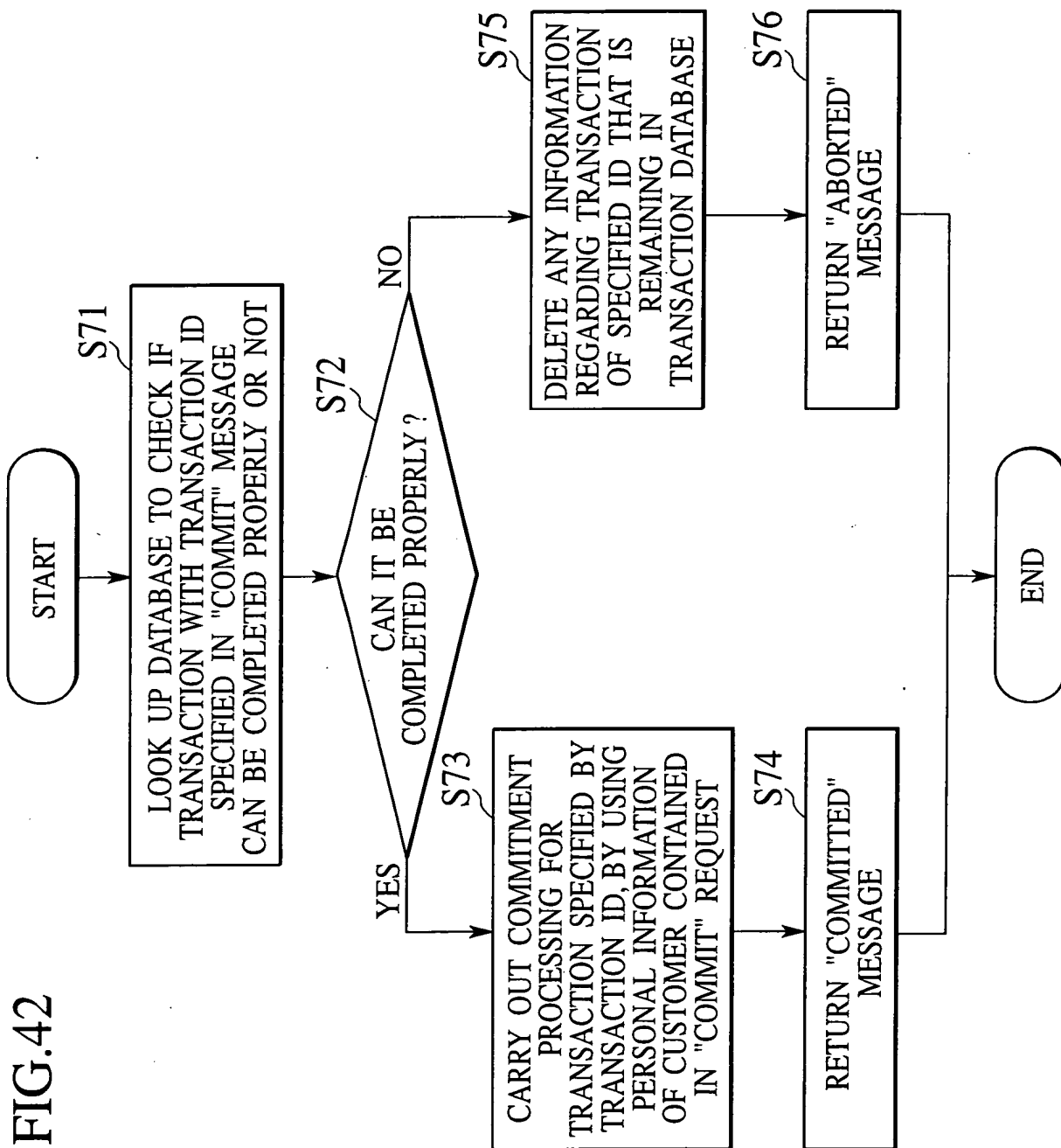


FIG.41





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FIG.43

